SEQUENCE LISTING

<110> Paul B. Fisher and Ruoquian Shen

<120> DEVELOPMENT OF DNA PROBES AND IMMUNOLOGICAL REAGENTS SPECIFIC FOR CELL SURFACE-EXPRESSED MOLECULES AND TRANSFORMATION-ASSOCIATED GENES

<130> 0667/37590-C-PCT-US

<140> 08/875,553
<141> 1998-05-26

<160> 43

<170> PatentIn version 3.0

<210> 1
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 1
gagtctgaat agggcgactt 20

<210> 2
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 2
agtcagtaca gctagatgcc 20

<210> 3
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 3
agacacaggc caggtatttc aggtc 25

<210> 4
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 4
cacgatggtg tccttgatcc acttc 25

<210> 5
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 5
tcttactcct tggaggccat g 21

<210> 6
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 6
cgtcttcacc accatggaga a 21

<210> 7
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 7
aagctgacgc ctcatttgca 20

<210> 8
<211> 20

<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 8
aaccaccaat ggaactgggt 20

<210> 9
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 9
agacacaggc caggtatttc aggtc 25

<210> 10
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 10
cacgatggtg tccttgatcc acttc 25

<210> 11
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 11
tcttactcct tggaggccat g 21

<210> 12
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 12
cgtcttcacc accatggaga a 21

<210> 13
<211> 59
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 13
cggcccgagc tcgtgccgaa ttcggcccga gagcgttaaa gtgtgatggc gtacatctt 59

<210> 14
<211> 14
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 14
ttttttttt ttgc 14

<210> 15
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 15
accgacgtcg actatccatg aaca 24

<210> 16
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<221> misc_feature
<222> ()..()
<223> Primer

<400> 16
aactaagtgg aggaccgaac 20

<210> 17
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 17
ccttgcatat taacataact cg 22

<210> 18
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 18
aagtcgccct attcagact 19

<210> 19
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 19
ccttgcatat taacataact cgc 23

<210> 20
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()

<223> Primer

<400> 20
aagtcgccct attcagactc 20

<210> 21
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> ()..()
<223> Primer

<400> 21
aactaactgg aggaccgaac 20

<210> 22
<211> 2128
<212> DNA
<213> Human

<400> 22
gtatacgaaa tcataaaatc tcatagatgt atcctgagta gggcggggcc cgtgaaaccc 60
tctgaatctg cggccaccac ccggtaaggc taaatactaa tcagacaccg atagtgaact 120
agtaccgtga gggaaaggtg aaaagaaccc gagaggggag tgaaatagat tctgaaacca 180
tttacttaca agtggtccat ttacttacaa gtgtcagagc acgttaaagt gtgatggcgt 240
acatcttgca gtatgggccg gcgagttatg ttaatatgca aggttaagca gaaaaaagcg 300
gagccgtagg gaaaccgagt ctgaataggg cgactttagt atattggcat atacccgaaa 360
tcaggtgatc tatccatgag caggttgaag cttaggtaaa actaagtgga ggaccgaacc 420
gtagtacgct aaaaagtgcc cggatggact tgtggatagt ggtgaaattc caatcgaacc 480
tggagatagc tggttctctt cgaaatagct ttagggctag cgtatagtat tgtttaatgg 540
gggtagagca ctgaatgtgg aatggcggca tctagctgta ctgactataa tcaaactccg 600
aataccatta aaattaagct atgcagtcgg aacgtggtat caccattgat atctccttgt 660
ggaaatttga gaccagcaag tactatgtga ctatcattga tgccccagga cacagagact 720
ttatccaaaa catgattaca gggacctctc aggctgactg tgctgtcctg attgttgctg 780
ctggtgttgg tgaatttgaa gctggtatct ccaagaatgg gcagacccga cagcatgccc 840
ttctggctta cacactgggt gtgaaacaac taattgtcgg tgttaacaaa atggattcca 900
ctgagccacc ctacagccag aagagatatg aggaaattgt taaggaagtc agcacttaca 960
ttaagaaaat tggctacaac cccgacacag tagcatttgt gccaatttct ggttggaatg 1020

gtgacaacat gctggagcca agtgctaaca tgccttggtt caagggatgg aaagtcaccc 1080

gtaaggatgg caatgccagt ggaaccacgc tgcttgaggc tctggactgc atcctaccac 1140

caactcgtcc aactgacaag cccttgggcc tgcctctcca ggatgtctac aaaattggtg 1200

gtattggtac tgttcctgtt ggccgagtgg agactggtgt tctcaaaccc ggtatggtgg 1260

tcacctttcg tccagtcaac gttacaacgg aagtaaaatc tgtcgaaatg caccatgaag 1320

ctttgggtga agctcttcct ggggacaatg tgggcttcaa tgtcaagaat gtgtctgtca 1380

aggatgttcg tcgtggcaac gttgctggtg acagcaaaaa tgacccacca atggaagcag 1440

ctggcttccc tgctcaggtg attatcctga accatccagg ccaaataagc gccggctatg 1500

cccctgtatt ggattgccac acggctcaca ttgcatgcaa gtttgctgag ctgaaggaaa 1560

agattgatcg ccgttctggt aaaaagctgg aagatggccc taaattcttg aagtctggtg 1620

atgctgccat tgttgatatg gttcctggca agcccatgtg tgttgagagc ttctcagact 1680

atccaccttt gggctgcttt gctgtcgttg atatgagaca gacagttgcg gtgggtgtca 1740

tcaaagcagt ggacaagaag gctgctggag ctggcaaggt caccaagtct gcccagaaag 1800

ctcagaaggc taaatgaata ttatccctaa tacctcccac cccactctta atcagtggtg 1860

gaagaccggt ctcagaactg tttgtttcaa ttggccattt aagtttagta gtaaaagact 1920

ggttaatgat aacaatgcat cgtaaaacct ttcagaagga aaggagaatg ttttgtggac 1980

cacgttggtt ttctttttg cgtgtggcag ttttaagtta ttagttttta aaatcagtac 2040

tttttaatgg aaacaacttg acccccaaat ttgtcacaga attttgggac ccattaaaaa 2100

ggttaactgg gaaaaaaaaa aaaaaaaa 2128

<210> 23
<211> 398
<212> PRT
<213> Human

<400> 23

Met Gln Ser Glu Arg Gly Ile Thr Ile Asp Ile Ser Leu Trp Lys Phe
1 5 10 15

Glu Thr Ser Lys Tyr Tyr Val Thr Ile Ile Asp Ala Pro Gly His Arg
20 25 30

Asp Phe Ile Gln Asn Met Ile Thr Gly Thr Ser Gln Ala Asp Cys Ala
35 40 45

Val Leu Ile Val Ala Ala Gly Val Gly Glu Phe Glu Ala Gly Ile Ser
50 55 60

Lys Asn Gly Gln Thr Arg Gln His Ala Leu Leu Ala Tyr Thr Leu Gly
65 70 75 80

Val Lys Gln Leu Ile Val Gly Val Asn Lys Met Asp Ser Thr Glu Pro

```
                85                  90                  95

Pro Tyr Ser Gln Lys Arg Tyr Glu Glu Ile Val Lys Glu Val Ser Thr
            100                 105                 110

Tyr Ile Lys Lys Ile Gly Tyr Asn Pro Asp Thr Val Ala Phe Val Pro
        115                 120                 125

Ile Ser Gly Trp Asn Gly Asp Asn Met Leu Glu Pro Ser Ala Asn Met
    130                 135                 140

Pro Trp Phe Lys Gly Trp Lys Val Thr Arg Lys Asp Gly Asn Ala Ser
145                 150                 155                 160

Gly Thr Thr Leu Leu Glu Ala Leu Asp Cys Ile Leu Pro Pro Thr Arg
                165                 170                 175

Pro Thr Asp Lys Pro Leu Gly Leu Pro Leu Gln Asp Val Tyr Lys Ile
            180                 185                 190

Gly Gly Ile Gly Thr Val Pro Val Gly Arg Val Glu Thr Gly Val Leu
        195                 200                 205

Lys Pro Gly Met Val Val Thr Phe Arg Pro Val Asn Val Thr Thr Glu
    210                 215                 220

Val Lys Ser Val Glu Met His His Glu Ala Leu Gly Glu Ala Leu Pro
225                 230                 235                 240

Gly Asp Asn Val Gly Phe Asn Val Lys Asn Val Ser Val Lys Asp Val
                245                 250                 255

Arg Arg Gly Asn Val Ala Gly Asp Ser Lys Asn Asp Pro Pro Met Glu
            260                 265                 270

Ala Ala Gly Phe Pro Ala Gln Val Ile Ile Leu Asn His Pro Gly Gln
        275                 280                 285

Ile Ser Ala Gly Tyr Ala Pro Val Leu Asp Cys His Thr Ala His Ile
    290                 295                 300

Ala Cys Lys Phe Ala Glu Leu Lys Glu Lys Ile Asp Arg Arg Ser Gly
305                 310                 315                 320

Lys Lys Leu Glu Asp Gly Pro Lys Phe Leu Lys Ser Gly Asp Ala Ala
                325                 330                 335

Ile Val Asp Met Val Pro Gly Lys Pro Met Cys Val Glu Ser Phe Ser
            340                 345                 350

Asp Tyr Pro Pro Leu Gly Cys Phe Ala Val Val Asp Met Arg Gln Thr
        355                 360                 365

Val Ala Val Gly Val Ile Lys Ala Val Asp Lys Lys Ala Ala Gly Ala
    370                 375                 380

Gly Lys Val Thr Lys Ser Ala Gln Lys Ala Gln Lys Ala Lys
385                 390                 395
```

<210> 24
<211> 462
<212> PRT

<213> Human

<400> 24

```
Met Gly Lys Glu Lys Thr His Ile Asn Ile Val Val Ile Gly His Val
1               5                  10                  15

Asp Ser Gly Lys Ser Thr Thr Thr Gly His Leu Ile Val Lys Cys Gly
            20                  25                  30

Gly Ile Asp Lys Arg Thr Ile Glu Lys Phe Glu Lys Glu Ala Ala Glu
        35                  40                  45

Met Gly Lys Gly Ser Phe Lys Tyr Ala Trp Val Leu Asp Lys Leu Lys
    50                  55                  60

Ala Glu Arg Glu Arg Gly Ile Thr Ile Asp Ile Ser Leu Trp Lys Phe
65                  70                  75                  80

Glu Thr Ser Lys Tyr Tyr Val Thr Ile Ile Asp Ala Pro Gly His Arg
                85                  90                  95

Asp Phe Ile Lys Asn Met Ile Thr Gly Thr Ser Gln Ala Asp Cys Ala
            100                 105                 110

Val Leu Ile Val Ala Ala Gly Val Gly Glu Phe Glu Ala Gly Ile Ser
        115                 120                 125

Lys Asn Gly Gln Thr Arg Glu His Ala Leu Leu Ala Tyr Thr Leu Gly
    130                 135                 140

Val Lys Gln Leu Ile Val Gly Val Asn Lys Met Asp Ser Thr Glu Pro
145                 150                 155                 160

Pro Tyr Ser Gln Lys Arg Tyr Glu Glu Ile Val Lys Glu Val Ser Thr
                165                 170                 175

Tyr Ile Lys Lys Ile Gly Tyr Asn Pro Asp Thr Val Ala Phe Val Pro
            180                 185                 190

Ile Ser Gly Trp Asn Gly Asp Asn Met Leu Glu Pro Ser Ala Asn Met
        195                 200                 205

Pro Trp Phe Lys Gly Trp Lys Val Thr Arg Lys Asp Gly Asn Ala Ser
    210                 215                 220

Gly Thr Thr Leu Leu Glu Ala Leu Asp Cys Ile Leu Pro Pro Thr Arg
225                 230                 235                 240

Pro Thr Asp Lys Pro Leu Arg Leu Pro Leu Gln Asp Val Tyr Lys Ile
                245                 250                 255

Gly Gly Ile Gly Thr Val Pro Val Gly Arg Val Glu Thr Gly Val Leu
            260                 265                 270

Lys Pro Gly Met Val Val Thr Phe Ala Pro Val Asn Val Thr Thr Glu
        275                 280                 285

Val Lys Ser Val Glu Met His His Glu Ala Leu Ser Glu Ala Leu Pro
    290                 295                 300

Gly Asp Asn Val Gly Phe Asn Val Lys Asn Val Ser Val Lys Asp Val
```

305 310 315 320

Arg Arg Gly Asn Val Ala Gly Asp Ser Lys Asn Asp Pro Pro Met Glu
325 330 335

Ala Ala Gly Phe Thr Ala Gln Val Ile Ile Leu Asn His Pro Gly Gln
340 345 350

Ile Ser Ala Gly Tyr Ala Pro Val Leu Asp Cys His Thr Ala His Ile
355 360 365

Ala Cys Lys Phe Ala Glu Leu Lys Glu Lys Ile Asp Arg Arg Ser Gly
370 375 380

Lys Lys Leu Glu Asp Gly Pro Lys Phe Leu Lys Ser Gly Asp Ala Ala
385 390 395 400

Ile Val Asp Met Val Pro Gly Lys Pro Met Cys Val Glu Ser Phe Ser
405 410 415

Asp Tyr Pro Pro Leu Gly Arg Phe Ala Val Arg Asp Met Arg Gln Thr
420 425 430

Val Ala Val Gly Val Ile Lys Ala Val Asp Lys Lys Ala Ala Gly Ala
435 440 445

Gly Lys Val Thr Lys Ser Ala Gln Lys Ala Gln Lys Ala Lys
450 455 460

<210> 25
<211> 397
<212> PRT
<213> Human

<400> 25

Met Gln Ser Glu Arg Gly Ile Thr Ile Asp Ile Ser Leu Trp Lys Phe
1 5 10 15

Glu Thr Ser Lys Tyr Tyr Val Thr Ile Ile Asp Ala Pro Gly His Arg
20 25 30

Asp Phe Ile Gln Asn Met Ile Thr Gly Thr Ser Gln Ala Asp Cys Ala
35 40 45

Val Leu Ile Val Ala Ala Gly Val Gly Glu Phe Glu Ala Gly Ile Ser
50 55 60

Lys Asn Gly Gln Thr Arg Glu His Ala Leu Leu Ala Tyr Thr Leu Gly
65 70 75 80

Val Lys Gln Leu Ile Val Gly Val Asn Lys Met Asp Ser Thr Glu Pro
85 90 95

Pro Tyr Ser Gln Lys Arg Tyr Glu Glu Ile Val Lys Glu Val Ser Thr
100 105 110

Tyr Ile Lys Lys Ile Gly Tyr Asn Pro Asp Thr Val Ala Phe Val Pro
115 120 125

Ile Ser Gly Trp Asn Gly Asp Asn Met Leu Glu Pro Ser Ala Asn Met
130 135 140

```
Pro Trp Phe Lys Gly Trp Lys Val Thr Arg Lys Asp Gly Asn Ala Ser
145                 150                 155                 160

Gly Thr Thr Leu Glu Ala Leu Asp Cys Ile Leu Pro Pro Thr Arg Pro
                165                 170                 175

Thr Asp Lys Pro Leu Gly Leu Pro Leu Gln Asp Val Tyr Lys Ile Gly
            180                 185                 190

Gly Ile Gly Thr Val Pro Val Gly Arg Val Glu Thr Gly Val Leu Lys
        195                 200                 205

Pro Gly Met Val Val Thr Phe Gly Pro Val Asn Val Thr Thr Glu Val
    210                 215                 220

Lys Ser Val Glu Met His His Glu Ala Leu Gly Glu Ala Leu Pro Gly
225                 230                 235                 240

Asp Asn Val Gly Phe Asn Val Lys Asn Val Ser Val Lys Asp Val Arg
                245                 250                 255

Arg Gly Asn Val Ala Gly Asp Ser Lys Asn Asp Pro Pro Met Glu Ala
            260                 265                 270

Ala Gly Phe Pro Ala Gln Val Ile Ile Leu Asn His Pro Gly Gln Ile
        275                 280                 285

Ser Ala Gly Tyr Ala Pro Val Leu Asp Cys His Thr Ala His Ile Ala
    290                 295                 300

Cys Lys Phe Ala Glu Leu Lys Glu Lys Ile Asp Arg Arg Ser Gly Lys
305                 310                 315                 320

Lys Leu Glu Asp Gly Pro Lys Phe Leu Asp Ser Gly Asp Ala Ala Ile
                325                 330                 335

Val Asp Met Val Pro Gly Lys Pro Met Cys Val Glu Ser Phe Ser Asp
            340                 345                 350

Tyr Pro Pro Leu Gly Cys Phe Ala Val Arg Asp Met Arg Gln Thr Val
        355                 360                 365

Ala Val Gly Val Ile Lys Ala Val Asp Lys Lys Ala Ala Gly Ala Gly
    370                 375                 380

Lys Val Thr Lys Ser Ala Gln Lys Ala Gln Lys Ala Lys
385                 390                 395
```

<210> 26
<211> 1819
<212> DNA
<213> Human

<400> 26
cggaccgagc tccgttgcat tttgatgaat ccatagtcaa attagcgaga cacgttgcga 60

attgaaacat cttagtagca acaggaaaag aaaataaata atgatttcgt cagtagtggc 120

gagcgaaagc gaaagagccc aaacctgtaa agggggttg gtaggacatc ttacattgag 180

ttacaaaatt ttatgatagt agaagaagtt gggaaagctt caacatagaa ggtgatattc 240

ctgtatacga aatcataaaa tctcatagat gtatcctgag tagggcgggg tacgtgaaac 300
cctgtctgaa tctgcccggg accacccgta aggctaaata ctaatcagac accgatagtg 360
aactagtacc gtgagggaaa ggtgaaaaga acccgagagg ggagtgaaat agattctgaa 420
accatttact tacaagtagt cagagcacgt taaagtgtga tggcgtacat cttgcagtat 480
gggccggcga gttatgttaa tatgcaaggt taagcacgaa aaaagcggag ccgtagggaa 540
accgagtctg aatagggcga ctttagtata ttggcatata cccgaaacca ggtgatcatc 600
catgagcagg ttgaagctta ggtaaaacta agtggaggac cgaaccgtag tacgctaaaa 660
agtgcccgga tgacttgtgg atagtggtga aattccaatc gaacctggag atagctggtt 720
ctcttcgaaa tagctttagg gctagcgtat agtactgttt aatgggggta gagcactgaa 780
tgtggaatgg cggcatctag ctgtactgac tataatcaaa ctccgaatac cattaaaatt 840
aagctatgca gtcggaacgt gggtgataac gtccacgctc gcgagggaaa caacccagat 900
ccgtcagcta aggtcccaaa aatgtgttaa gtgagaaagg ttgtggagat ttcataaaca 960
actaggaagt tggtttagaa gcagccacct tttaaagagt gcgtaattgc tcactagtca 1020
agagatcttg cgccaataat gtaacgggac tcaaacacaa tacccaagct acgggcacat 1080
tatgtgcgtt aggagagcgt tttaatttcg ttgaagtcag accgtgagac tggtggagag 1140
attaaaagtt cgagaatgcc ggcatgagta acgattcgaa gtgagaatct tcgacgccta 1200
ttgggaaagg tttcctgggc aaggttctcc acccagggtt agtcagggcc taagatgagg 1260
cagaaatgca tagtcgatgg acaacaggtt aatattcctg tacttggtaa aagaatgatg 1320
gagtgacgaa aaaggatagt tctaccactt ccactatgtc ctatcaatag gagctgtatt 1380
tggcatcata ggaggcttca ttcactgatt tcccctattc tcaggctaca ccctagacca 1440
aacctacgcc aaaatccatt tcactatcat attcatcggc gtaaatctaa ctttcttccc 1500
acaacacttt ctcggcctat ccggaatgac ccgacccgac gttactcgga ctaccccgat 1560
gcatacacca catgaaacat cctatcatct gtaggctcat tcatttctct aacagcagta 1620
atattaataa ttttcatgat ttgagaagcc ttcgccttcg aagcgaaaag tcctaatagt 1680
agaagaaccc tccataaacc tggagtgact atatggatgc ccccacccta cctcacattc 1740
gaagaacccg tatacataaa atctagacaa aaaaggaagg aagtgaacgc cccacaaaaa 1800
aaaaaaaaaa aaaaaaaaa 1819

<210> 27
<211> 1869
<212> DNA
<213> Human

<400> 27

aactaagtgg aggaccgaac cgtagtacgc taaaaagtgc ccggatgact tgtggatagt 60
ggtgaaattc caatcgaacc tggagatagc tggttctctt cgaaatagct ttagggctag 120
cgtatagtat tgtttaatgg gggtagagca ctgaatgtgg aatcggcggc atctagctgt 180
actgactata atcaaactcc gaataccatt aaaattaagc tatgcagtcg gaacgtgggt 240
gataacctcc actctcgcga gggaaacaac ccagatcgtc agctaaggtc ccaaaattgt 300
gttaagtgag aaaggttgtg agatttcata aacaactagg aagttggctt agaagcagcc 360
acctttaaa gagtgcgtaa ttgctcacta gtcaagagat cttgcgccaa taatgtaacg 420
ggactcaaac acaataccga agctacgggc acattatgtc ggttaggaga gcgttttaat 480
ttcgttgaag tcagaccgtg agactggtgg agagattaaa agttcgagaa tgcccggcat 540
gagtaacgat tcgaagtgag aatcttcgac gcctattggg aaaggtttcc tgggcaaggt 600
tcgtccaccc agggttagtc agggcctaag atgaggcaga aatgcatagt cgatggacaa 660
caggttaata ttcctgtact tggtaaaaga atgatggagt gacgaaaaag gatagttcta 720
ccacttactg gattgtgggg taagcaacaa gagagttata taggcaaatc cgtatagcat 780
aatcttgagt tgtgatgcat agtgaagact tcggtcgagt aacgaattga atcgatttca 840
tgtttccaag aaaagcttct agtgttaatt ttttatcaac ctgtaccgag aacgaacaca 900
cgttcccaag atgagtattc taaggcgagc gagaaaacca atgttaagga actctgcaaa 960
ataaccccgt aagttcgcga gaaggggcgc ctatttttaa taggccacag aaaatagggg 1020
ggcaactgtt tatcaaaaac acagctctct gctaagttgt aaaacgacgt atagagggtg 1080
aagcctgccc agtcccgaag ttaaacggag atgttagctt acgcaaagca ttaaagtgaa 1140
gcccgggtga acggcggccg taactataac ggtcctaagg tagcgaaatt ccttgtcaac 1200
taattattga cctgcacgaa aggcgcaatg atctccctac tgtctcaaca ttggactcgg 1260
tgaaattatg gtaccagtga aaacgcaggt tacccgcatc aagacgaaaa gaccccgtgg 1320
agctttacta taacttcgta ttgaaaattg gtttagcatg tgtaggatag gcgggagact 1380
ttgaagctgg gacgctagtt ctagtggagt caaccttgaa ataccaccct tgctaaattg 1440
attttctaac ccgttcccct tatctggaag gagacagtgc gtggtgggta gtttgactgg 1500
gcggtcgcct cctaaagtgt aacggaggcg ttcaaagcta cactcaatat ggtcagaaac 1560
catatgcaga gcacaaaggt aaaagtgtgg ttgactgcaa gacttacaag tcgagcaggt 1620
gcgaaagcag gacttagtga tccggcggta cattgtggaa tggccgtcgc tcaacggata 1680
aaagtcaccc cggggataac aggctaatct tccccaagag atcacatcga cgggaaggtt 1740
tggcacctcg atgtcggctc atcgcatcct ggagctggag tcggttccaa gggtttgctg 1800
ttcgccaatt aaagcggtac gtgagctggg ttcagaacgt cgtgagacag ttcggtcctc 1860

cacttagtt 1869

<210> 28
<211> 3850
<212> DNA
<213> Human

<400> 28
cggcacgagc ggcacgagag aagagactcc aatcgacaag aagctggaaa agaatgatgt 60
tgtccttaaa caacctacag aatatcatct ataacccggt aatcccgttt gttggcacca 120
ttcctgatca gctggatcct ggaactttga ttgtgatacg tgggcatgtt cctagtgacg 180
cagacagatt ccaggtggat ctgcagaatg gcagcagcgt gaaacctcga gccgatgtgg 240
cctttcattt caatcctcgt ttcaaaaggg ccggctgcat tgtttgcaat actttgataa 300
atgaaaaatg gggacgggaa gagatcacct atgacacgcc tttcaaaaga gaaaagtctt 360
ttgagatcgt gattatggtg ctgaaggaca aattccaggt ggctgtaaat ggaaaacata 420
ctctgctcta tggccacagg atcggcccag agaaaataga cactctgggc atttatggca 480
aagtgaatat tcactcaatt ggttttagct tcagctcgga cttacaaagt acccaagcat 540
ctagtctgga actgacagag atagttagag aaaatgttcc aaagtctggc acgccccagc 600
ttagcctgcc attcgctgca aggttgaaca cccccatggg ccctggacga actgtcgtcg 660
ttcaaggaga agtgaatgca aatgccaaaa gctttaatgt tgacctacta gcaggaaaat 720
caaaggatat tgctctacac ttgaacccac gcctgaatat taaagcattt gtaagaaatt 780
cttttcttca ggagtcctgg ggagaagaag agagaaatat tacctctttc ccatttagtc 840
ctgggatgta ctttgagatg ataatttatt gtgatgttag agaattcaag gttgcagtaa 900
atggcgtaca cagcctggag tacaaacaca gatttaaaga gctcagcagt attgacacgc 960
tggaaattaa tggagacatc cacttactgg aagtaaggag ctggtagcct acctacacag 1020
ctgctacaaa aaccaaaata cagaatggct tctgtgatac tggccttgct gaaacgcatc 1080
tcactggtca ttctattgtt tatattgtta aaatgagctt gtgcaccatt aggtcctgct 1140
gggtgttctc agtccttgcc atgacgtatg gtggtgtcta gcactgaatg gggaaactgg 1200
gggcagcaac acttatagcc agttaaagcc actctgccct ctctcctact ttggctgact 1260
cttcaagaat gccattcaac aagtatttat ggagtaccta ctataataca gtagctaaca 1320
tgtattgagc acagattttt tttggtaaat ctgtgaggag ctaggatata tacttggtga 1380
aacaaaccag tatgttccct gttctcttga gcttcgactc ttctgtgcgc tactgctgcg 1440
cactgctttt tctacaggca ttacatcaac tcctaagggg tcctctggga ttagttatgc 1500
agatattaaa tcacccgaag acactaactt acagaagaca caactccttc cccagtgatc 1560
actgtcataa ccagtgctct gccgtatccc atcactgagg actgatgttg actgacatca 1620

ttttctttat cgtaataaac atgtggctct attagctgca agctttacca agtaattggc 1680
atgacatctg agcacagaaa ttaagccaaa aaaccaaagc aaaacaaata catggtgctg 1740
aaattaactt gatgccaagc ccaaggcagc tgatttctgt gtatttgaac ttacccgaaa 1800
tcagagtcta cacagacgcc tacagaagtt tcaggaagag ccaagatgca ttcaatttgt 1860
aagatattta tggccaacaa agtaaggtca ggattagact tcaggcattc ataaggcagg 1920
cactatcaga aagtgtacgc caactaaggg acccacaaag caggcagagg taatgcagaa 1980
atctgttttg ttcccatgaa atcaccaatc aaggcctccg ttcttctaaa gattagtcca 2040
tcatcattag caactgagat caaagcactc ttccacttta cgtgattaaa atcaaacctg 2100
tatcagcaag ttaaatggtt ccatttctgt gatttttcta ttatttgagg ggagttggca 2160
gaagttccat gtatatggga tctttacagg tcagatcttg ttacaggaaa tttcaaaggt 2220
ttgggagtgg ggagggaaaa aagctcagtc agtgaggatc attccacatt agactggggc 2280
agaactctgc caggatttag gaatattttc agaacagatt ttagatatta tttctatcca 2340
tatattgaaa aggaatacca ttgtcaatct tatttttta aaagtactca gtgtagaaat 2400
cgctagccct taattctttt ccagcttttc atattaatgt atgcagagtc tcaccaagct 2460
caaagacact ggttgggggt ggagggtgcc acagggaaag ctgtagaagg caagaagact 2520
cgagaatccc ccagagttat ctttctccat aaagaccatc agagtgctta actgagctgt 2580
tggagactgt gaggcattta ggaaaaaaat agcccactca catcattcct tgtaagtctt 2640
aagttcattt tcattttacg tggaggaaaa aaatttaaaa agctattagt atttattaat 2700
gaattttact gagacatttc ttagaaatat gcacttctat actagcaagc tctgtctcta 2760
aaatgcaagt tggccttttg cttgccacat ttctgcatta aacttctata ttagcttcaa 2820
aggcttttaa tctcaatgcg aacattctac gggatgttct tagatgcctt taaaaagggg 2880
gcaagatcta attttatttg aaccctcact ttccaacttt caccatgacc cagtactaga 2940
gattagggca cttcaaagca ttgaaaaaaa tctactgata cttactttct tagacaagta 3000
gttcttagtt aaccaccaat ggaactgggt tcattctgaa tcctggagga gcttcctcgt 3060
gccacccagt gtttctgggc cctctgtgtg agcagccagg tgtgagctgt tttagaagca 3120
gcgtgttgcc ttcatctctc ccgtttccca aaagaacaaa ggataaaggt gacagtcaca 3180
ctcctgggtt aaaaaaagca ttccagaacc acttctcttt atgggcacaa caacaaagaa 3240
gctaagttcg cctacccaaa tgaaagtagg ctttacagtc aagtacttct gttgattgct 3300
aaataacttc attttcttga aatagagcaa ctttgagtga aatctgcaac atggatacca 3360
tgtatgtaag atactgctgt acagaagagt taaggcttac agtgcaaatg aggcgtcagc 3420
tttgggtgct aaaattaaca agtctaatat tattaccatc aatcaggaag agataataaa 3480

tgtttaaaca aacacagcag tctgtataaa aatacgtgta tatttactct ttctgtgcac 3540

gctctatagc ataggcagga gaggcttatg tggcagcaca agccaggtgg ggattttgta 3600

aagaagtgat aaaacatttg taagtaatcc aagtaggaga tattaaggca ccaaaagtaa 3660

catggcaccc aacacccaaa aataaaaata tgaaatatga gtgtgaactc tgagtagagt 3720

atgaaacacc acagaaagtc ttagaaatag ctctggagtg gctctcccag gacagtttcc 3780

agttggctga atagtctttt ggcactgatg ttctacttct tcacattcat ctaaaaaaaa 3840

aaaaaaaaaa 3850

<210> 29
<211> 954
<212> DNA
<213> Human

<400> 29
atgatgttgt ccttaaacaa cctacagaat atcatctata acccggtaat cccgtttgtt 60

ggcaccattc ctgatcagct ggatcctgga actttgattg tgatacgtgg gcatgttcct 120

agtgacgcag acagattcca ggtggatctg cagaatggca gcagcgtgaa acctcgagcc 180

gatgtggcct ttcatttcaa tcctcgtttc aaaagggccg gctgcattgt ttgcaatact 240

ttgataaatg aaaaatgggg acgggaagag atcacctatg acacgccttt caaaagagaa 300

aagtcttttg agatcgtgat tatggtgctg aaggacaaat tccaggtggc tgtaaatgga 360

aaacatactc tgctctatgg ccacaggatc ggcccagaga aaatagacac tctgggcatt 420

tatggcaaag tgaatattca ctcaattggt tttagcttca gctcggactt acaaagtacc 480

caagcatcta gtctggaact gacagagata gttagagaaa atgttccaaa gtctggcacg 540

ccccagctta gcctgccatt cgctgcaagg ttgaacaccc ccatgggccc tggacgaact 600

gtcgtcgttc aaggagaagt gaatgcaaat gccaaaagct ttaatgttga cctactagca 660

ggaaaatcaa aggatattgc tctacacttg aacccacgcc tgaatattaa agcatttgta 720

agaaattctt ttcttcagga gtcctgggga gaagaagaga gaaatattac ctctttccca 780

tttagtcctg ggatgtactt tgagatgata atttattgtg atgttagaga attcaaggtt 840

gcagtaaatg gcgtacacag cctggagtac aaacacagat ttaaagagct cagcagtatt 900

gacacgctgg aaattaatgg agacatccac ttactggaag taaggagctg gtag 954

<210> 30
<211> 317
<212> PRT
<213> Human

<400> 30

```
Met Met Leu Ser Leu Asn Asn Leu Gln Asn Ile Ile Tyr Asn Pro Val
1               5                  10                  15

Ile Pro Phe Val Gly Thr Ile Pro Asp Gln Leu Asp Pro Gly Thr Leu
            20                  25                  30

Ile Val Ile Arg Gly His Val Pro Ser Asp Ala Asp Arg Phe Gln Val
        35                  40                  45

Asp Leu Gln Asn Gly Ser Ser Val Lys Pro Arg Ala Asp Val Ala Phe
    50                  55                  60

His Phe Asn Pro Arg Phe Lys Arg Ala Gly Cys Ile Val Cys Asn Thr
65                  70                  75                  80

Leu Ile Asn Glu Lys Trp Gly Arg Glu Glu Ile Thr Tyr Asp Thr Pro
                85                  90                  95

Phe Lys Arg Glu Lys Ser Phe Glu Ile Val Ile Met Val Leu Lys Asp
            100                 105                 110

Lys Phe Gln Val Ala Val Asn Gly Lys His Thr Leu Leu Tyr Gly His
        115                 120                 125

Arg Ile Gly Pro Glu Lys Ile Asp Thr Leu Gly Ile Tyr Gly Lys Val
    130                 135                 140

Asn Ile His Ser Ile Gly Phe Ser Phe Ser Ser Asp Leu Gln Ser Thr
145                 150                 155                 160

Gln Ala Ser Ser Leu Glu Leu Thr Glu Ile Val Arg Glu Asn Val Pro
                165                 170                 175

Lys Ser Gly Thr Pro Gln Leu Ser Leu Pro Phe Ala Ala Arg Leu Asn
            180                 185                 190

Thr Pro Met Gly Pro Gly Arg Thr Val Val Val Gln Gly Glu Val Asn
        195                 200                 205

Ala Asn Ala Lys Ser Phe Asn Val Asp Leu Leu Ala Gly Lys Ser Lys
    210                 215                 220

Asp Ile Ala Leu His Leu Asn Pro Arg Leu Asn Ile Lys Ala Phe Val
225                 230                 235                 240

Arg Asn Ser Phe Leu Gln Glu Ser Trp Gly Glu Glu Glu Arg Asn Ile
                245                 250                 255

Thr Ser Phe Pro Phe Ser Pro Gly Met Tyr Phe Glu Met Ile Ile Tyr
            260                 265                 270

Cys Asp Val Arg Glu Phe Lys Val Ala Val Asn Gly Val His Ser Leu
        275                 280                 285

Glu Tyr Lys His Arg Phe Lys Glu Leu Ser Ser Ile Asp Thr Leu Glu
    290                 295                 300

Ile Asn Gly Asp Ile His Leu Leu Glu Val Arg Ser Trp
305                 310                 315
```

<210> 31
<211> 46

<212> PRT
<213> Human

<400> 31

Ala Glu Asp Leu Ala Leu His Ile Asn Pro Arg Phe Asp Ala His Gly
1 5 10 15

Asp Gln Gln Ala Val Val Asn Asn Ser Phe Gln Gly Gly Asn Trp Gly
20 25 30

Thr Glu Gln Arg Glu Gly Gly Phe Pro Phe Leu Gln Gly Glu
35 40 45

<210> 32
<211> 46
<212> PRT
<213> Human

<400> 32

Ser Thr His Leu Gly Leu His Phe Asn Pro Arg Phe Asn Ala His Gly
1 5 10 15

Asp Ala Asn Leu Ile Val Cys Asn Ser Lys Lys Met Glu Glu Trp Gly
20 25 30

Thr Glu Gln Arg Glu Thr Val Phe Pro Phe Gln Gln Gly Gln
35 40 45

<210> 33
<211> 46
<212> PRT
<213> Human

<400> 33

Ser Asn Asn Leu Cys Leu His Phe Asn Pro Arg Phe Asn Ala His Gly
1 5 10 15

Asp Val Asn Leu Ile Val Cys Asn Thr Lys Glu Asp Gly Thr Trp Gly
20 25 30

Thr Glu His Arg Glu Pro Ala Phe Pro Phe Gln Pro Phe Gln
35 40 45

<210> 34
<211> 46
<212> PRT
<213> Human

<400> 34

Ser Asn Asn Leu Cys Leu His Phe Asn Pro Arg Phe Asn Ala His Gly
1 5 10 15

Asp Ala Asn Thr Ile Val Cys Asn Ser Lys Asp Asp Gly Thr Trp Gly
20 25 30

Thr Glu Gln Arg Glu Thr Ala Phe Pro Phe Gln Pro Gly Ser
35 40 45

<210> 35
<211> 46
<212> PRT
<213> Human

<400> 35

Ser Asn Asn Leu Cys Leu His Phe Asn Pro Arg Phe Asn Ala His Gly
1 5 10 15

Asp Ala Asn Thr Ile Val Cys Asn Ser Lys Asp Gly Gly Ala Trp Gly
20 25 30

Thr Glu Gln Arg Glu Ala Val Phe Pro Phe Gln Pro Gly Ser
35 40 45

<210> 36
<211> 18
<212> PRT
<213> Human

<400> 36

Ser Asn Asn Leu Leu Gly Gly Ala Trp Gly Gln Glu Ala Val Phe Tyr
1 5 10 15

Phe Pro

<210> 37
<211> 27
<212> PRT
<213> Human

<400> 37

Ser Gly Lys Phe Asn Ala His Ser Gly Gly Ala Trp Gly Thr Glu Gln
1 5 10 15

Arg Glu Ala Val Phe Pro Phe Gln Pro Gly Ser
20 25

<210> 38
<211> 42
<212> PRT
<213> Human

<400> 38

Thr Asp Lys Leu Asn Leu His Phe Asn Pro Arg Phe Ser Gly Ser Thr
1 5 10 15

Ile Val Cys Asn Ser Leu Asp Gly Ser Asn Trp Gly Gln Glu Gln Arg
20 25 30

Glu Asp His Leu Cys Phe Ser Pro Gly Ser
35 40

<210> 39
<211> 17
<212> PRT
<213> Human

<400> 39

Thr Trp Gly Thr Glu Gln Arg Glu Asp His Leu Pro Phe Gln Pro Gly
1 5 10 15

Ser

<210> 40
<211> 46
<212> PRT
<213> Human

<400> 40

Gly Asn Asp Val Ala Phe His Phe Asn Pro Arg Phe Ser Glu Asn Asn
1 5 10 15

Phe Phe Val Val Ile Val Cys Asn Thr Lys Gln Asp Asn Asn Trp Gly
20 25 30

Lys Glu Glu Arg Lys Ser Ala Phe Pro Phe Glu Cys Gly Asn
35 40 45

<210> 41
<211> 45
<212> PRT
<213> Human

<400> 41

Gly Asn Asp Val Ala Phe His Phe Asn Pro Arg Phe Asn Glu Asn Asn
1 5 10 15

Arg Arg Val Ile Val Cys Asn Thr Lys Leu Asp Asn Asn Trp Gly Arg
20 25 30

Glu Glu Arg Gln Ser Val Phe Pro Phe Glu Ser Gly Lys
35 40 45

<210> 42
<211> 45
<212> PRT
<213> Human

<400> 42

Gly Asn Asp Val Ala Phe His Phe Asn Pro Arg Phe Asn Glu Asn Asn
1 5 10 15

Arg Arg Val Ile Val Cys Asn Thr Lys Leu Asp Asn Asn Trp Gly Arg
20 25 30

Glu Glu Arg Gln Ser Val Phe Pro Phe Glu Ser Gly Lys
35 40 45

<210> 43
<211> 43
<212> PRT
<213> Human

<400> 43

```
Arg Ala Asp Val Ala Phe His Phe Asn Pro Arg Phe Lys Arg Ala Gly
1               5                   10                  15

Cys Ile Val Cys Asn Thr Leu Ile Asn Glu Lys Trp Gly Arg Glu Glu
            20                  25                  30

Ile Thr Tyr Asp Thr Pro Phe Lys Arg Glu Lys
        35                  40
```